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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/653,222	09/03/2003	Jin Li	M4065.0735/P735	2741

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DICKSTEIN SHAPIRO LLP  
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Washington, DC 20006-5403

EXAMINER
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NGUYEN, JOSEPH H

ART UNIT	PAPER NUMBER
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2815

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/12/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	Application No. 10/653,222	Applicant(s) LI, JIN	
	Examiner Joseph Nguyen	Art Unit 2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 26 February 2007.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-17, 21, 27, 31-33, 36-39, 41 and 47-55 is/are pending in the application.
- 4a) Of the above claim(s) 1-17, 31-33, 36-39 and 41 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 21, 27 and 47-55 is/are rejected.
- 7) ☒ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 02/26/2007 has been entered.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 21, 27, 47, 49, 53 and 55 are rejected under 35 U.S.C. 102(b) as being anticipated by Kochi et al. (US 6,188,094 B1).

Regarding claim 21, Kochi et al. discloses in **figure 1** a light system comprising a substrate (101) having a plurality of photosensitive regions (102); and a substantially planar microlens array (108, 109) formed over said plurality of photosensitive regions; said microlens array comprising a first light conductor (108) having a plurality of concave recesses; and a second light conductor (109) within each recess and over

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substantially planar surfaces formed between said concave recesses of said first light conductor (108), said microlens array being formed over said photosensitive regions (102) without a light shielding layer between said microlens array and said photosensitive regions. (See column 1). It is further noted that the system disclosed in figure 1 of Kochi et al. constitutes similar structure as the claimed structure, and therefore is capable of functioning as "light detecting system" herein.

Regarding claim 27, Kochi et al. discloses in **figure 1** an integrated circuit comprising a substrate (101) having a plurality of photosensitive regions (102); and a substantially planar microlens array (108, 109) formed over said plurality of photosensitive regions; said microlens array comprising a first light conductor (108) having a plurality of concave recesses, said plurality of concave recesses being coextensive, and a second light conductor (109) within each recess and over said first light conductor, said second light conductor (109) being coextensive with an adjacent second light conductor in at least a first plane and having a substantially planar surface, and readout circuitry (104) coupled to said plurality of photosensitive regions (102) within said substrate (101), said microlens array being formed over said photosensitive regions (102) without a light shielding layer between said microlens array and said photosensitive regions. (See column 1)

Regarding claims 47 and 53, Kochi et al. discloses the first light conductor 108 has a first index of refraction and the second light conductor 109 has a second index of refraction that is different from said first index of refraction (col. 1, lines 53-56).

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Regarding claims 49 and 55, Kochi et al. discloses at least the first conductor 108 is formed of material selected from the group consisting of photosensitive gelatin (col. 1, lines 36-39).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 48, 54 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over figure 1 of Kochi et al. in view of figure 3A of Kochi et al.

Regarding claims 48 and 54, Kochi does not show in figure 1 the first index of refraction is less than the second index of refraction. However, Kochi et al. also discloses in figure 3A the first index of refraction  $n_5$  is less than the second index of refraction  $n_4$  such that light can be condensed onto photodiode having smaller area (see figure 3A). In view of such teaching, it would have been obvious at the time of the present invention to modify figure 1 of Kochi et al. by including the first index of refraction being less than the second index of refraction such that light can be condensed onto photodiode having smaller area.

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Regarding claim 50, Kochi et al. does not disclose in figure 1 a color filter formed over the second light conductor. However, Kochi et al. also discloses in figure 2 a color filter can be formed under the microlenses 17 (col. 5, lines 21-23), which would be above the second light conductor 15 such that light coming through the microlens toward the light conductors 14, 15 can be color filtered. In view of such teaching, it would have been obvious at the time of the present invention to modify figure 1 of Kochi et al. by including a color filter formed above the second light conductor such that light coming through the microlens toward the light conductors 14, 15 can be color filtered.

Claim 51 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kochi et al. in view of figure 1 of the acknowledged prior art (APA).

Regarding claim 51, Kochi et al. does not disclose in figure 1 a color filter formed below the first light conductor. However, figure 1 of (APA) shows a color filter 22 below the first light conductor 12. In view of such teaching, it would have been obvious at the time of the present invention to modify Kochi et al. by having a color filter formed below the first light conductor to allow predominantly light of a specific respective color to pass through an imaging array (page 3, lines 1-5 of the present invention).

Claim 52 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kochi et al.

Regarding claim 52, Kochi et al. discloses in figure 1 a portion of the second light conductor 109 over said planar surface of the first light conductor 108 must have a

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certain thickness, not necessarily the claimed thickness. However, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to Kochi et al. by having a portion of the second light conductor over said planar surface of the first light conductor having the claimed thickness, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

### ***Response to Arguments***

Applicant's arguments filed on 02/02/2007 have been fully considered but they are not persuasive.

Regarding claims 21 and 27, applicant argues Kochi et al. does not disclose or suggest "said microlens array being formed over said photosensitive regions without a light shielding layer between said microlens array and said photosensitive regions" as recited in now amended claims 21 and 27 (See page 9 of REMARKS filed on 02/02/2007). However, Kochi et al. only discloses in figure 1 the light-shielding portion 105 between the microlens array 108, 109 and a transfer electrode portion 104. It is noted that the transfer portion 104 is used herein to transfer photocharges of the photosensitive region 102 (See column 1) such that it is desirable to shield light from the transfer portion 104. On the other hand, there must be no light shielding portion between the microlens array 108, 109 and the photosensitive regions 102 because it is greatly desirable to have as much light as possible from the microlens array flow into the photosensitive regions such that more light can be converted to electric signal and

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thus the photoelectric conversion efficiency can be increased. Therefore, Kochi et al. clearly discloses in figure 1 said microlens array 108, 109 being formed over said photosensitive regions 102 without a light shielding layer between said microlens array and said photosensitive regions.

Lastly, since the rejection of independent claims 21 and 27 is proper as explained above, the rejection of dependent claims 47-55 still stands accordingly.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Nguyen whose telephone number is (571) 272-1734. The examiner can normally be reached on Monday-Friday, 8:30 am- 5:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Parker can be reached on (571) 272-2298. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300 for regular communications.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink that reads "Joseph Nguyen". The signature is written in a cursive, flowing style.

Joseph Nguyen

Patent Examiner

June 7, 2004